

AMENDMENT TO THE CLAIMS

Applicant respectfully requests entry of the amendments specified below. Claims 1, 9, 15, 19, 22, 23 and 24 are currently amended. Following entry of this Amendment claims 1-15 and 18-26 are pending.

1. (Currently amended) A seismic receiver for detecting seismic energy and transmitting digital data relating to the detected seismic energy to a data recorder, the receiver comprising:

a casing;

a seismic energy detector that detects the seismic energy, surface, velocity and elevation data and converts the detected seismic energy and the surface, velocity and elevation data into an analog electrical signal;

an analog to digital converter, coupled to the seismic energy detector, that converts the analog electrical signal into the digital data; and

a digital signal transmission circuitry, coupled to the analog to digital converter, that transmits the digital data to the data recorder;

wherein the seismic energy detector, the digital transmission circuitry, and the analog to digital converter are housed within the casing ~~such that the seismic receiver appears like an analog seismic receiver.~~

2. (Original) The seismic receiver of claim 1, further comprising:

a control circuitry, coupled to the analog to digital converter, that controls functions associated with the operation of the seismic receiver.

3. (Original) The seismic receiver of claim 2, further comprising an amplifier, coupled to the analog to digital converter, that amplifies the analog signal.

4. (Original) The seismic receiver of claim 3, wherein the control circuitry controls the amplifier.

5. (Original) The seismic receiver of claim 2, further comprising a power management circuitry, the power management circuitry housed in the casing and providing power to components of the seismic receiver.

6. (Original) The receiver of claim 2, wherein the control circuitry provides clock signals to the analog to digital converter.

7. (Previously presented) The seismic receiver of claim 2 wherein the control circuitry is operable to receive a signal from an external source, and initiates a transmission of the data in response to the external signal.

8. (Previously presented) The seismic receiver of claim 2, wherein the digital transmission circuitry and the analog to digital converter are embodied on a printed circuit board (PCB) in the casing.

9. (Currently amended) A method for obtaining seismic data, the method comprising the steps of:

detecting a seismic event and surface, velocity and elevation data at a seismic receiver;

converting the seismic event into an analog electrical signal;

converting the analog electrical signal event and the surface, velocity and elevation data into a digital data within the receiver;

awaiting a control signal to transfer the digital data; and

transferring the digital data to a remote collection device upon receiving the control signal.

10. (Previously presented) The method of claim 9, wherein the control signal is generated from another receiver.

11. (Previously presented) The method of claim 9, wherein the control signal is generated from within the receiver.

12. (Previously presented) The method of claim 9, wherein the step of converting the analog signal is accomplished with an analog to digital converter.

13. (Previously presented) The method of claim 9, further comprising the step of amplifying the analog electrical signal.

14. (Previously presented) The method of claim 9, wherein the step of transferring is accomplished at least in part with a control circuitry located within a casing of the seismic receiver.

15. (Currently amended) A method of collecting seismic data from a seismic receiver at a collection device, the seismic receiver collecting seismic energy event and surface, velocity and elevation data, the method comprising the steps of:

determining a digital signal indicative of the seismic energy event and the surface, velocity and elevation data within the receiver; and

transmitting the digital signal to the collection device,
wherein the step of transmitting is performed in response to a signal from another receiver.

16. (Canceled)

17. (Canceled)

18. (Original) The method of claim 15 further comprising the step of storing the digital signal.

19. (Currently amended) An apparatus to digitize a seismic signal event and surface, velocity and elevation data collected by a seismic signal collector of a seismic receiver, the apparatus comprising:

a casing;
a board capable of conducting electrical signals;

a digitizer, communicatively coupled to the seismic signal collector and contained on the board, that digitizes the seismic signal event and the surface, velocity and elevation data; and

the board fitting inside the seismic receiver;
wherein the seismic signal collector, the digitizer, and the board are housed within the casing ~~such that the apparatus appears like an analog seismic receiver.~~

20. (Original) The apparatus of claim 19, further comprising:
control circuitry, communicatively coupled to the digitizer, that controls the digitizing of the seismic signal.

21. (Original) The apparatus of claim 19 wherein the board can be folded on itself without breaking the electrical connections contained thereon.

22. (Currently amended) A seismic streamer that collects seismic data event and surface, velocity and elevation data and transmits digital data representative of collected seismic data event and the surface, velocity and elevation data to a collection device, the seismic streamer comprising:

a plurality of seismic receivers communicatively coupled to one another through a transmission line, at least one of the seismic receivers comprising:

a casing;

a seismic energy detector that detects the seismic energy event and surface, velocity and elevation data and converts the detected seismic energy event and the surface, velocity and elevation data into an analog electrical signal;

an analog to digital converter, coupled to the seismic energy detector, that converts the analog electrical signal into digital data; and

a digital signal transmission circuitry, coupled to the analog to digital converter, that transmits the digital data to a data recorder; wherein

the seismic energy detector, the digital transmission circuitry, and the analog to digital converter are housed within the casing ~~such that the seismic receiver appears like an analog seismic receiver.~~

23. (Currently amended) A seismic exploration system for collecting digital data representative of collected seismic data event and surface, velocity and elevation data, the system comprising:

a data recorder that collects digital data representative of collected seismic data;
and

a plurality of seismic receivers communicatively coupled to one another through a transmission line, at least one of the seismic receivers comprising:

a casing;

a seismic energy detector that detects the seismic energy event and converts the detected seismic energy event into an analog electrical signal;

an analog to digital converter, coupled to the seismic energy detector, that converts the analog electrical signal event and the surface, velocity and elevation data into the digital data; and

a digital signal transmission circuitry, coupled to the analog to digital converter, that transmits the digital data to a data recorder;

wherein the seismic energy detector, the digital transmission circuitry, and the analog to digital converter are housed within the casing ~~such that the seismic receiver appears like an analog seismic receiver.~~

24. (Currently amended) A seismic receiver for detecting seismic energy event and surface, velocity and elevation data and transmitting digital data relating to the detected seismic energy event and the surface, velocity and elevation data to a data recorder, the receiver comprising:

a casing;

a seismic energy detector that detects the seismic energy and converts the detected seismic energy into an analog electrical signal;

an analog to digital converter, coupled to the seismic energy detector, that converts the analog electrical signal event and the surface, velocity and elevation data into the digital data;

a digital signal transmission circuitry, coupled to the analog to digital converter, that transmits the digital data to the data recorder; and

a test circuitry coupled to the seismic energy detector,

wherein the test circuitry transmits a test signal to the seismic energy detector;

and

wherein the seismic energy detector, the digital transmission circuitry, the analog to digital converter and the test circuitry are housed within the casing.

25. (Previously presented) The seismic receiver of claim 24, wherein the test signal test enables the testing and the calibration of the seismic energy detector.

26. (Previously presented) The seismic receiver of claim 24, wherein the test signal enables the testing of the verticality of the seismic receiver.